

Patent claims

1. A plasma particulate filter based on a wall flow filter, comprising which are closed of on alternate
5 sides and are elongate inlet and outlet passages made from ceramic filter material, particulates being deposited on the filter surfaces of the inlet passages, where they are oxidized by the action of dielectric barrier sliding surface discharges in order to
10 regenerate the filter, characterized by the combination of the following features:
 - the passages (10, 20) have a cross section with two-line symmetry
 - to generate the sliding surface discharges there
15 are precisely two electrodes (41, 42) of different polarity, lying on one of the lines of symmetry (60, 60'), per inlet passage (10).
2. The plasma particulate filter as claimed in
20 claim 1, characterized in that the electrodes (41, 42) are embedded in the filter material (30) and are thereby protected against erosion.
3. The plasma particulate filter as claimed in one of
25 the preceding claims, characterized in that the electrodes (41, 42) are embedded in an electrically insulating barrier material (43) of low porosity.
4. The plasma particulate filter as claimed in one of
30 the preceding claims, characterized in that the sliding surface discharges burn selectively on the inlet side, which is covered with particulates, of the wall flow filter with inlet passage (10) and outlet passage (20).
- 35 5. The plasma particulate filter as claimed in one of the preceding claims, characterized in that the cross section of the passages (10, 20) in two-line symmetry has a quadrilateral geometry, the two electrodes (41,

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42) being arranged at opposite corners of the quadrilateral geometry.

6. The plasma particulate filter as claimed in
5 claim 5, characterized in that the quadrilateral geometry is a vertically oriented diamond.

7. The plasma particulate filter as claimed in
10 claim 6, in which electrodes are arranged at diagonally opposite corners of a plurality of adjacent diamond-shaped passage cross sections, characterized in that the electrodes (41, 42) at the corners of adjacent inlet passages (10) are connected so as to have the same polarity.

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8. The plasma particulate filter as claimed in one of
claims 1 to 5, characterized in that the cross section of the inlet passage (10) with two-line geometry has a geometry with $(n \times 4)$ corners, where $n \geq 2$, which is
20 obtained by deformation of the quadrilateral cross section of the inlet passage (10) while keeping the electrodes (41, 42) and the first line of symmetry (60) in place (Fig. 5).